In the Claims:

1. (Currently Amended) A conductivity sensor comprising:

a first annular electrode having a first inner diameter and a first outer diameter;

a second annular electrode having the first inner diameter and the first outer diameter; and

a tubular portion disposed axially between said first electrode and said second electrode, said tubular portion defining a sensor cell with said first annular electrode and said second annular electrode;

said cell having a second inner diameter substantially equal to the first outer diameter that is greater than said first inner diameter and a cell length between said first electrode and said second electrode;

said first electrode and said second electrode extending axially from said tubular portion.

2. (Original) A conductivity sensor as recited in claim 1 wherein said cell has a cell constant defined by the formula:

$$\pi D_2^2/4L$$

where D_2 is said second inner diameter.

3. (Original) A conductivity sensor as recited in claim 1 further comprising a seal material between said first annular electrode and said tubular portion.

4. (Previously Presented) A conductivity sensor as recited in claim 1 further comprising a control circuit generating an output corresponding to a conductivity of a fluid between said first annular electrode and said second annular electrode.

5. (Original) A conductivity sensor as recited in claim 1 further comprising a calibration circuit.

6. (Original) A conductivity sensor as recited in claim 5 wherein said calibration circuit comprises a zero adjustment circuit.

7. (Original) A conductivity sensor as recited in claim 5 wherein said calibration circuit comprises a gain adjustment circuit.

8. (Previously Presented) A conductivity sensor as recited in claim 7 wherein said gain adjustment circuit is coupled to said first electrode.

9. (Original) A conductivity sensor as recited in claim 1 further comprising a buffer circuit coupled to said first electrode.

10. (Previously Presented) A conductivity sensor as recited in claim 4 wherein said control circuit is an operational amplifier-based.

11. (Currently Amended) A conductivity sensor for coupling in a coolant path comprising:

a first annular electrode having a first inner diameter and a first outer diameter, said first annular electrode having a first threaded portion on said first outer diameter;

a second annular electrode having a second inner diameter and a second outer diameter, said second annular electrode having a second threaded portion on said second outer diameter; and

a tubular portion disposed axially between said first electrode and said second electrode, said tubular portion having a third inner diameter greater than said first inner diameter and said second inner diameter[[,]] and substantially equal to said first outer diameter and said second outer diameter;

said tubular portion, said first electrode, and said second electrode defining a sensor cell having said third inner diameter, said cell having a cell length between said first electrode and said second electrode;

said first electrode and said second electrode extending axially from said tubular portion so that said coolant path may be coupled to the first electrode and the second electrode.

12. (Original) A sensor as recited in clam 11 wherein said first inner diameter and said second inner diameter are equivalent.

13. (Original) A sensor as recited in clam 11 wherein said first outer diameter and said second outer diameter are equivalent.

14. (Original) A conductivity sensor as recited in claim 11 further comprising a seal material between said first annular electrode and said tubular portion.

15. (Original) A conductivity sensor as recited in claim 11 wherein said seal material comprises polytetrafluoroethylene.

16. (Currently Amended) A method of assembling a conductivity sensor comprising:

coupling a first annular electrode having a first inner diameter and first outer diameter to a tubular portion having a second inner diameter substantially equal to the first outer diameter;

coupling a second annular electrode having the first inner diameter and the first outer diameter to the tubular portion so that the tubular portion is positioned axially between said first electrode and said second electrode and so that the first electrode and the second electrode extends axially from within the tubular portion,

defining a sensor cell having [[a]] the second inner diameter that is greater than said first inner diameter with said first annular electrode, said

said first electrode and said second electrode extending axially from said tubular portion so that said coolant path may be coupled to the first electrode and the second electrode.

12. (Original) A sensor as recited in clam 11 wherein said first inner diameter and said second inner diameter are equivalent.

13. (Original) A sensor as recited in clam 11 wherein said first outer diameter and said second outer diameter are equivalent.

14. (Original) A conductivity sensor as recited in claim 11 further comprising a seal material between said first annular electrode and said tubular portion.

15. (Original) A conductivity sensor as recited in claim 11 wherein said seal material comprises polytetrafluoroethylene.

16. (Currently Amended) A method of assembling a conductivity sensor comprising:

coupling a first annular electrode having a first inner diameter and first outer diameter to a tubular portion having a second inner diameter substantially equal to the first outer diameter;

coupling a second annular electrode having the first inner diameter and the first outer diameter to the tubular portion so that the tubular portion is positioned axially between said first electrode and said second electrode and so that the first electrode and the second electrode extends axially from within the tubular portion,

defining a sensor cell having [[a]] the second inner diameter that is greater than said first inner diameter with said first annular electrode, said second annular electrode, and said tubular portion.

17. (Original) A method as recited in claim 16 wherein said step of coupling a first annular electrode having a first inner diameter to a tubular portion comprises threadably coupling a first annular electrode having a first inner diameter to a tubular portion.

18. (Original) A method as recited in claim 16 further comprising coupling a control circuit to said first annular electrode and said second annular electrode calibrating the control circuit.

19. (Original) A method as recited in claim 18 wherein calibrating said control circuit comprises open circuit zeroing said control circuit.

20. (Original) A method as recited in claim 18 wherein calibrating said control circuit comprises adjusting the gain of a buffer circuit.